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10/802,363	03/16/2004	Dongchoon Suh	8170/DISPLAY/AKT/RKK	3803
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PATTERSON & SHERIDAN, LLP			KISWANTO, NICHOLAS	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/802,363

Applicant(s)

SUH ET AL.

Examiner

Nicholas Kiswanto

Art Unit

4132

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 August 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-45 is/are pending in the application.
- 4a) Of the above claim(s) 39 and 46 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9, 12-20, 25-27, 30-34, 36, 38 and 40-45 is/are rejected.
- 7) ☒ Claim(s) 10, 11, 21-24, 28, 29, 35, and 37 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

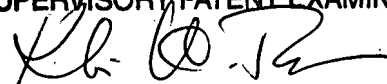
- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

KHOI H. TRAN  
SUPERVISORY PATENT EXAMINER



### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
- Paper No(s)/Mail Date See Continuation Sheet

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 4-6, 12, 25, 26, 30, 38, 40, and 41 are rejected under 35 U.S.C. 102(b) as being anticipated by Krupyshev (6,944,517), henceforth referred to as "Krupyshev/517".

As to claim 1, Krupyshev/517 shows a method for transferring a substrate in a processing system having at least one processing chamber (Fig. 1, 125) coupled to a transfer chamber (Fig. 1, 175) housing a robot (Fig. 1, 130), the method comprising: teaching a robot to move to an exchange position defined in a processing system (col 4, line 38 – 40); and correcting motion of the robot to compensate for a shift in the exchange position (col 9, line 46 – 48).

As to claim 2, Krupyshev/517 shows the method of claim 1, wherein the correcting further comprises: monitoring a condition within the processing system (col 6, line 16); determining the shift in exchange position based on the monitored condition (col 6, line 30 – 32); and correcting motion of the robot to compensate for the shift in the exchange position (col 6, line 33 – 34).

As to claim 4, Krupyshev/517 shows the method of claim 2, wherein the monitoring further comprises: sensing a change in state of the at least one processing chamber (col 6, line 31 – 32).

As to claim 5, Krupyshev/517 shows the method of claim 2, wherein the monitoring state further comprises: sensing a change in state of at least two processing chambers (col 7, line 23 & col 7, line 55).

As to claim 6, Krupyshev/517 shows the method of claim 2, wherein the monitoring further comprises: sensing a change in state of a second processing chamber different than a first processing chamber having the exchange position defined therein (col 7, line 23 & col 7, line 55).

As to claim 12, Krupyshev/517 shows the method of claim 2, wherein the determining further comprises: sensing a change in position of the processing chamber (col 7, line 23).

As to claim 25, Krupyshev/517 shows the method of claim 1, wherein the shift in the exchange position is due to a change in the thermal profile of the transfer chamber (col 1, line 33 - 35).

As to claim 26, Krupyshev/517 shows the method of claim 1, wherein the shift in the exchange position is due to a change in the thermal profile of at least one processing chamber (col 1, line 33 - 35).

As to claim 29, Krupyshev/517 shows the method of claim 27, wherein the resolving further comprises: determining a change in at least one of the position and orientation of a facet of the transfer chamber from which the temperature was sensed (col 7, line 23 & col 1, line 33 - 35).

As to claim 30, Krupyshev/517 shows a method for transferring a substrate in a processing system having at least a first processing chamber (Fig. 1, 125) coupled to a transfer chamber (Fig. 1, 175) housing a robot (Fig. 1, 130), the method comprising: teaching the robot to move to an exchange position defined in the first processing chamber relative to a predefined reference point within the transfer chamber (col 4, line 38 - 40); detecting a shift in the exchange position (col 6, line 30 - 32); and correcting the taught robot motion to compensate for the shift in the exchange position (col 6, line 33 - 34).

As to claim 38, Krupyshev/517 shows the method of claim 30, wherein the detecting further comprises: determining a change in a position of the reference point defined in the transfer chamber (col 4, line 38 - 40).

As to claim 40, Krupyshev/517 shows a method for transferring a substrate in a processing system having at least a first processing chamber (Fig. 1, 125) coupled to a transfer chamber (Fig. 1, 175) housing a robot (Fig. 1, 130), the method comprising: establishing a predefined reference point within the transfer chamber (col 5, line 41 – 44) and an exchange position of the first processing chamber (col 4, line 29 - 30); teaching a robot to move to the exchange position (col 4, line 38 - 40); monitoring relative positional change between the reference point and exchange position, wherein the monitoring the relative positional change between the reference point and exchange position further comprises detecting a change in lateral position of a substrate support disposed in the first processing chamber (col 9, line 56); and correcting the taught position of the robot in response to the relative positional change, thereby allowing the robot to arrive at the exchange position (col 10, line 25 - 28).

As to claim 41, Krupyshev/517 shows a method for transferring a substrate in a processing system having at least a first processing chamber (Fig. 1, 125) coupled to a transfer chamber (Fig. 1, 175) housing a robot (Fig. 1, 130), the method comprising: establishing a predefined reference point within the transfer chamber (col 5, line 41 – 44) and an exchange position of the first processing chamber (col 4, line 29 - 30); teaching a robot to move to the exchange position (col 4, line 38 - 40); monitoring relative positional change

between the reference point and exchange position, wherein the monitoring the relative positional change between the reference point and exchange position further comprises detecting a change in lateral position of the reference point of the transfer chamber due to thermal changes of the transfer chamber (col 9, line 56 & col 1, line 33 - 35); and correcting the taught position of the robot in response to the relative positional change, thereby allowing the robot to arrive at the exchange position (col 10, line 25 - 28).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 3, 7-9, 27, 31, 36, 42-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krupyshev/517, in view of Storm et al. (6,746,237), henceforth referred to as Storm/237.

As to claim 3, Krupyshev/517 discloses the claimed invention as shown in paragraph regarding claim 2 above.

However, Krupyshev/517 does not show a sensing a change in temperature.

Storm/237 shows a commonly well-known teaching of a processing system that senses a change in temperature (col 2, line 54).

It would have been obvious to one of ordinary skill in the art to combine the teaching of Storm/237 with the invention of Krupyshev/517 since detecting temperatures in a processing system is a commonly well-known method in the art.

As to claim 7, it would have further been obvious to one of ordinary skill in the art to place Storm/237's temperature sensor in at least one processing chamber since it is commonly well-known that each part of a processing system varies in temperature due to the different stages of a substrate making process.

As to claim 8, it would have further been obvious to one of ordinary skill in the art to place Storm/237's temperature sensor in a second processing chamber since it is commonly well-known that each part of a processing system varies in temperature due to the different stages of a substrate making process.

As to claim 9, it would have further been obvious to one of ordinary skill in the art to place Storm/237's temperature sensor in a processing chamber different than a processing chamber having the exchange position defined therein since it is commonly well-known that each part of a processing system varies in temperature due to the different stages of a substrate making process.



As to claim 27, Krupyshev/517 shows a method for transferring a substrate in a processing system having at least a first processing chamber (Fig. 1, 125) coupled to a transfer chamber (Fig. 175) housing a robot (Fig. 1, 130), the method comprising: defining an exchange position of the first processing chamber (col 4, line 29 – 30); detecting a shift in the exchange position (col 1, line 33 - 35); resolving the shift in exchange position corresponding to the sensed temperature (col 7, line 23); and correcting robot motion to compensate for the shift in the exchange position (col 7, line 28).

However, Krupyshev/517 does not show sensing temperature of at least one component of the system and its resolution of the shift in exchange position does not correspond to sensed temperature since Krupyshev/517 does not show sensing temperature.

Storm/217 shows the commonly well-known invention of a processing system with a temperature sensor (col 2, line 54).

It would have been obvious to one of ordinary skill in the art to combine the invention of Krupyshev/517 with Storm/217's teaching of a temperature sensor in order to achieve the predictable result of claimed invention, since using a temperature sensor is a commonly well-known method in the art.

As to claim 31, it is further obvious that the temperature sensor of Storm/217 is sensing the temperature profile of the transfer chamber.

As to claim 36, it would have been further obvious to one of ordinary skill in the art to sense the temperature at a plurality of locations since different areas of the processing system have different temperatures due to the different stages of a substrate making process.

As to claim 42, Krupyshev/517 shows a substrate processing system comprising: a transfer chamber (Fig. 1, 175); a processing chamber (Fig. 1, 125) coupled to the transfer chamber; a robot (Fig. 1, 130) disposed in the transfer chamber and adapted to transfer substrates between the transfer chamber and the processing chamber; a change in position between the transfer chamber and the processing chamber resolved (col 7, line 23); and a controller (col 6, line 23 – 25) coupled to the robot and adapted to provide instructions for correcting the robot's motions (col 6, line 40).

However, Krupyshev/517 does not show sensing temperature of at least one component of the system and its resolution of the shift in exchange position does not correspond to sensed temperature since Krupyshev/517 does not show sensing temperature. Further, since Krupyshev/517 does not show a temperature sensor, it does not show its controller receiving readings from said sensor.

Storm/217 shows the commonly well-known invention of a processing system with a temperature sensor (col 2, line 54).

It would have been obvious to one of ordinary skill in the art to combine the invention of Krupyshev/517 with Storm/217's teaching of a temperature sensor in order to achieve the predictable result of claimed invention, since using a temperature sensor is a commonly well-known method in the art.

As to claim 43, it would have been further obvious to one of ordinary skill in the art to sense the temperature at the transfer chamber since different areas of the processing system have different temperatures due to the different stages of a substrate making process.

As to claim 44, it would have been further obvious to one of ordinary skill in the art to sense the temperature using a plurality of sensors since different areas of the processing system have different temperatures due to the different stages of a substrate making process.

As to claim 45, it would have been further obvious to one of ordinary skill in the art to sense the temperature at a processing chamber since different areas of the processing system have different temperatures due to the different stages of a substrate making process.

5. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krupyshev/517, in view of Pryor (6,314,631), henceforth referred to as "Pryor/631".

As to claim 13, Krupyshev/517 further shows a position of a centerline of the processing chamber (Fig. 1, 245).

However, Krupyshev/517 does not show the sensing of position of said centerline.

Pryor/631 shows a processing system with a commonly well-known method of using a camera to measure the position of an object within the system.

It would have been obvious to one of ordinary skill in the art to combine the invention of Krupyshev/517 with the teaching of Pryor/631 in order to achieve the predictable result of claimed invention since using a camera to measure a position of an object in a processing system is commonly well-known in the art.

As to claim 14, Krupyshev/517 further shows the position of a centerline of the transfer chamber, here incorporated by reference in U.S. Patent No. 5,180,276 (Krupyshev/517: col 5, line 43; 5,180,276: col 3, line 18 – 19).

However, Krupyshev/517 does not show the sensing of position of said centerline.

Pryor/631 shows a processing system with a commonly well-known method of using a camera to measure the position of an object within the system.

It would have been obvious to one of ordinary skill in the art to combine the invention of Krupyshev/517 with the teaching of Pryor/631 in order to achieve

the predictable result of claimed invention since using a camera to measure a position of an object in a processing system is commonly well-known in the art.

6. Claims 15 – 20, and 32 - 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krupyshev/517 in view of Brown et al. (6,689,519), henceforth referred to as "Brown/519".

As to claim 15, Krupyshev/517 discloses the claimed invention as shown by the paragraph describing claim 2 above.

However, Krupyshev/517 does not show the method resolving a change in the exchange position based on empirical data.

Brown/519 shows a substrate processing system that uses the commonly well-known method of using empirical data to alter a step in the process based on the empirical data (col 12, line 12 - 13).

It would have been obvious to one of ordinary skill in the art to combine the invention of Krupyshev/517, where a change in the exchange position is resolved, with the teaching of Brown/519 in order to achieve the predictable result resolving the change in the exchange position based on empirical data.

As to claim 16, it would have been further obvious to one of ordinary skill in the art to use the change in position and orientation of the processing chamber relative to the transfer chamber due to thermal effects within the invention of

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Krupyshev/517 as the data used in Brown/519's teaching of using empirical data to resolve a change in the exchange position.

As to claim 17, Krupyshev/517 discloses the claimed invention as shown by the paragraph describing claim 2 above.

However, Krupyshev/517 does not show the method resolving a change in the exchange position based on modeled data.

Brown/519 shows a substrate processing system that uses the commonly well-known method of using modeled data to alter a step in the process based on the modeled data (col 12, line 14).

It would have been obvious to one of ordinary skill in the art to combine the invention of Krupyshev/517, where a change in the exchange position is resolved, with the teaching of Brown/519 in order to achieve the predictable result resolving the change in the exchange position based on modeled data.

As to claim 18, it would have been further obvious to one of ordinary skill in the art to use the change in position and orientation of the processing chamber relative to the transfer chamber due to thermal effects within the invention of Krupyshev/517 as the data used in Brown/519's teaching of using modeled data to resolve a change in the exchange position.

As to claim 19, Krupyshev/517 discloses the claimed invention as shown by the paragraph describing claim 2 above.

However, Krupyshev/517 does not show the method tracking time between state changes of at least one processing chamber.

Brown/519 shows a substrate processing system that uses the commonly well-known method of tracking time between state changes of at least one processing chamber (col 8, line 42 - 44).

It would have been obvious to one of ordinary skill in the art to combine the invention of Krupyshev/517 with the teaching of Brown/519 in order to achieve the predictable result of tracking time between state changes of at least one processing chamber.

As to claim 20, it would have been further obvious to one of ordinary skill in the art to use the thermal expansion within the invention of Krupyshev/517 as the state used in Brown/519's teaching of tracking time between state changes of at least one processing chamber.

As to claim 32, Krupyshev/517 discloses the claimed invention as shown in paragraph describing claim 30 above.

However, Krupyshev/517 does not show modeling a temperature profile of the transfer chamber based on a change in state of the first processing chamber.

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Brown/519 shows a substrate processing system that uses the commonly well-known method of modeling a parameter of a processing system (col 12, line 14).

It would have been obvious to one of ordinary skill in the art to combine the invention of Krupyshev/517, where a change in state of the first processing chamber results from temperature variations, with the teaching of Brown/519 in order to achieve the predictable result of modeling a temperature profile of the transfer chamber based on a change in state of the first processing chamber.

As to claim 33, Krupyshev/517 discloses the claimed invention as shown in paragraph describing claim 30 above.

However, Krupyshev/517 does not show modeling a temperature profile of the transfer chamber based on a change in state of a second processing chamber.

Brown/519 shows a substrate processing system that uses the commonly well-known method of modeling a parameter of a processing system (col 12, line 14).

It would have been obvious to one of ordinary skill in the art to combine the invention of Krupyshev/517, where a change in state of a second processing chamber results from temperature variations, with the teaching of Brown/519 in order to achieve the predictable result of modeling a temperature profile of the transfer chamber based on a change in state of a second processing chamber.



As to claim 34, Krupyshev/517 discloses the claimed invention as shown in paragraph describing claim 30 above.

However, Krupyshev/517 does not show determining a temperature profile of the transfer chamber based on empirical data.

Brown/519 shows a substrate processing system that uses the commonly well-known method of gathering empirical data of a parameter of a processing system (col 12, line 12 - 13).

It would have been obvious to one of ordinary skill in the art to combine the invention of Krupyshev/517, where temperature variations affect the transfer chamber, with the teaching of Brown/519 in order to achieve the predictable result of determining a temperature profile of the transfer chamber based on empirical data.

***Allowable Subject Matter***

1. Claims 10, 11, 21-24, 28, 29, 35, and 37 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record fail to teach or fairly suggest the claimed combination including compensating for movement of processing chambers due to temperature differences, the placement of temperature sensors on a facet of a processing system between the transfer chamber and processing chamber.

### ***Conclusion***

2. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hirose (5,762,745) and Brenninger et al. (6,217,212).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nicholas Kiswanto whose telephone number is (571) 270-3269. The examiner can normally be reached on Monday - Friday, 8AM - 5PM, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Khoi Tran can be reached on (571) 272-6919. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Nicholas Kiswanto  
October 25, 2007

**KHOI H. TRAN**  
**SUPERVISORY PATENT EXAMINER**

